KEITH WELLER (K7422-2)

Feeling Weak? Try the Tortillas!

Geneticist Victor Raboy examines a plant from a new line of corn he developed. The grain from the new corn is designed to be lower in phytic acid, a compound suspected to reduce nutrient absorption during human digestion.

Can corn combat anemia? It's a possibility.

Tortillas and other foods made from the flour of a unique corn may help combat iron-deficiency anemia. That could be a boon in developing countries where corn-based foods are a part of nearly every meal. In fact, products made from this corn could become useful around the world, since iron deficiency is fairly common in developed nations as well.

The novel corn, according to Agricultural Research Service geneticist Victor A. Raboy at Aberdeen, Idaho, may help the body to better absorb and use iron—an essential nutrient.

The plants that Raboy developed yield corn that's low in a naturally occurring compound called phytic acid, or phytate. Phytic acid is thought to reduce the body's ability to use certain nutrients, like iron.

The Raboy corn lines have up to 95 percent less phytic acid than most common varieties.

Researchers from the Institute of Nutrition of Central America and Panama and from the University of California's Berkeley and Davis campuses coordinated the corn-flour experiment with Raboy. Fourteen healthy men, age 19 to 35, volunteered for the investigation, which was conducted at Davis.

Blood tests indicated that iron absorption by the volunteers was about 50 percent greater if they ate tortillas made from flour of low-phytic-acid corn than if they ate tortillas prepared with normal corn flour having about two-thirds more phytic acid.

The Rockefeller Foundation, U.S. Agency for International Development, and Pioneer Hi-Bred International, Inc.—one of three companies licensed by ARS to produce the corn—helped fund the research.

Raboy says the study is the first to test the potential nutritional benefits of the low-phytic-acid corn in humans. Next, a team led by University of Colorado researchers will probe the effects of the corn on zinc, iron, and calcium absorption in a new study in Guatemala.

The unusual corn, patented in 1997, has already received national attention because of its ability to reduce phosphorus pollution in ponds, lakes, streams, and rivers. Phytic acid is a form of phosphorus, an essential mineral. Raboy's low-phytic-acid corn is correspondingly high in inorganic phosphorus—the form that one-stomached animals like pigs, chickens, or farm-raised fish can readily absorb and use.

These animals can't absorb most of the organic phosphorus in conventional corn, so too much of it can end up in their manure. Phosphorus leached from manure may make its way into rivers and streams, leading to algal blooms and fish kills.

Ongoing experiments in the United States and abroad will reveal more about the ways that the special corn—and other grains with the low-phytic-acid trait—should benefit people, animals, and the environment.—By **Marcia Wood,** ARS.

This research is part of Plant, Microbial, and Insect Genetic Resources, Genomics, and Genetic Improvement, an ARS National Program (#301) described on the World Wide Web at http://www.nps.ars.usda.gov/programs/cppvs.htm.

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